

FIG. 1

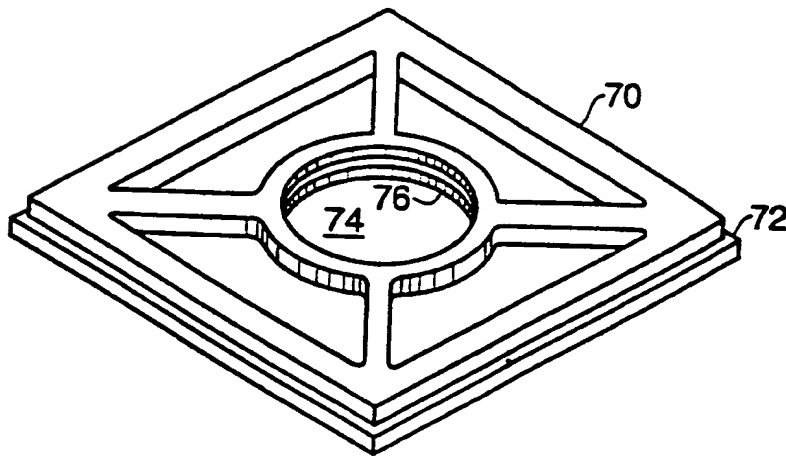
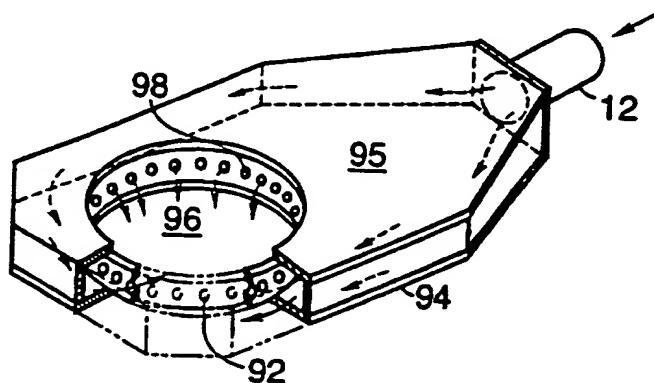


FIG. 4

FIG. 5





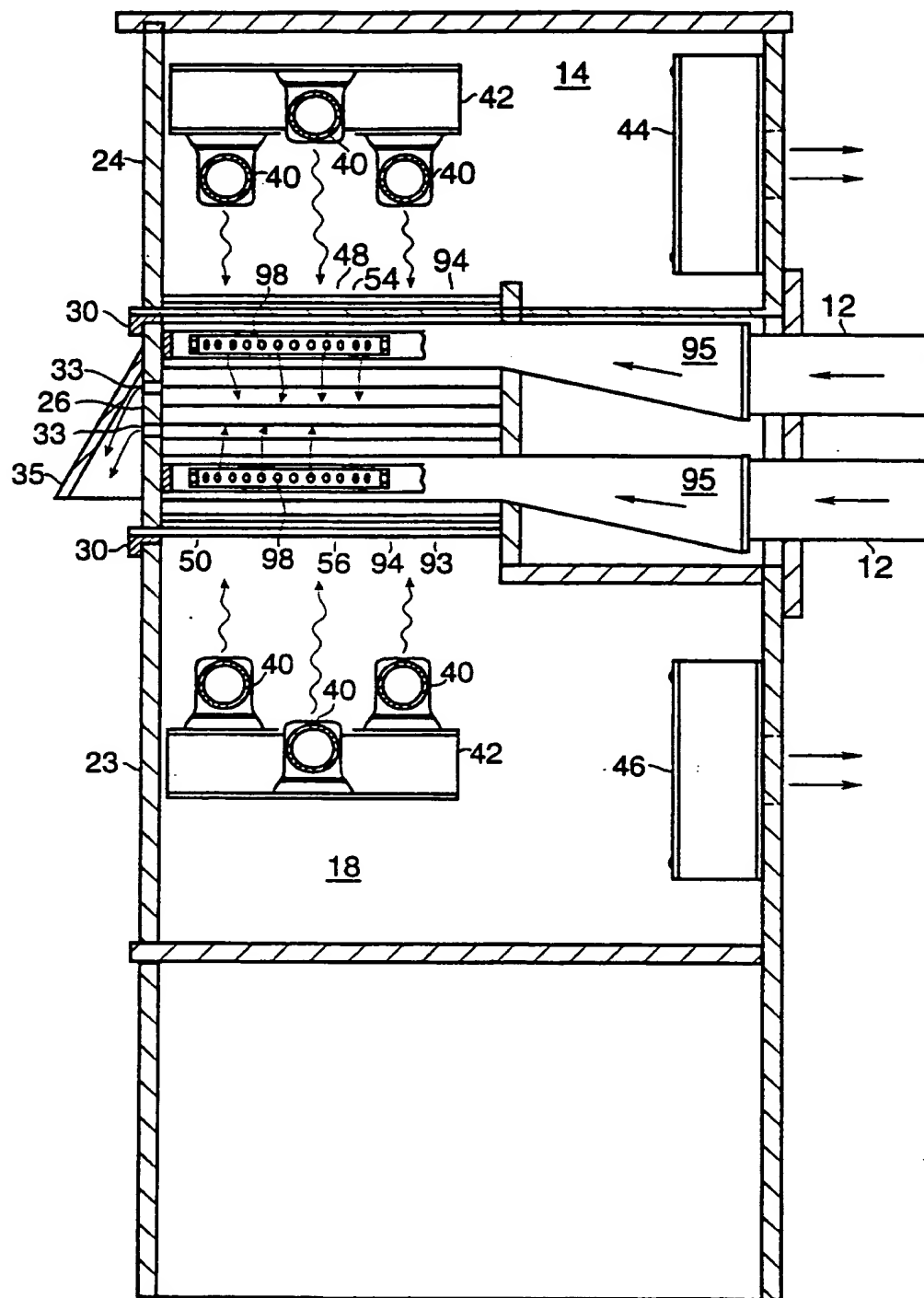


FIG. 3

66760-469660

Patented 11-16-2004

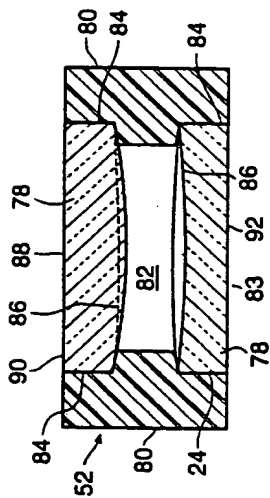
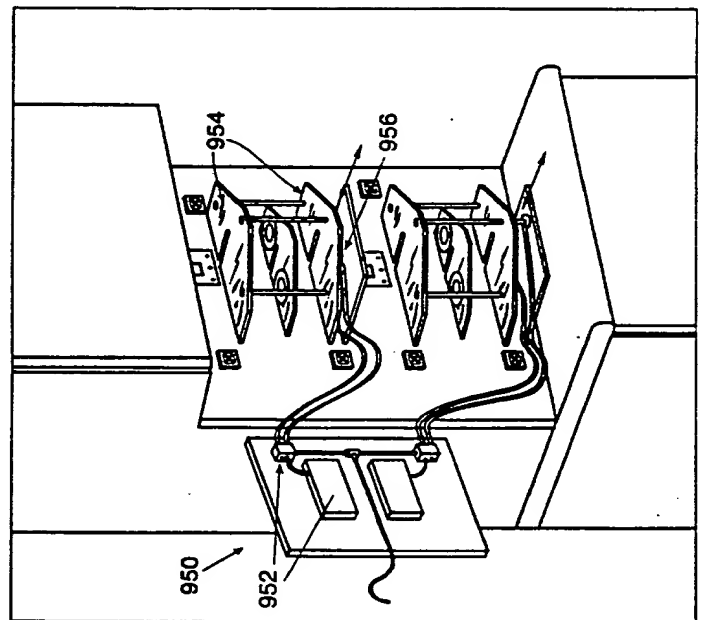


FIG. 6

FIG. 7



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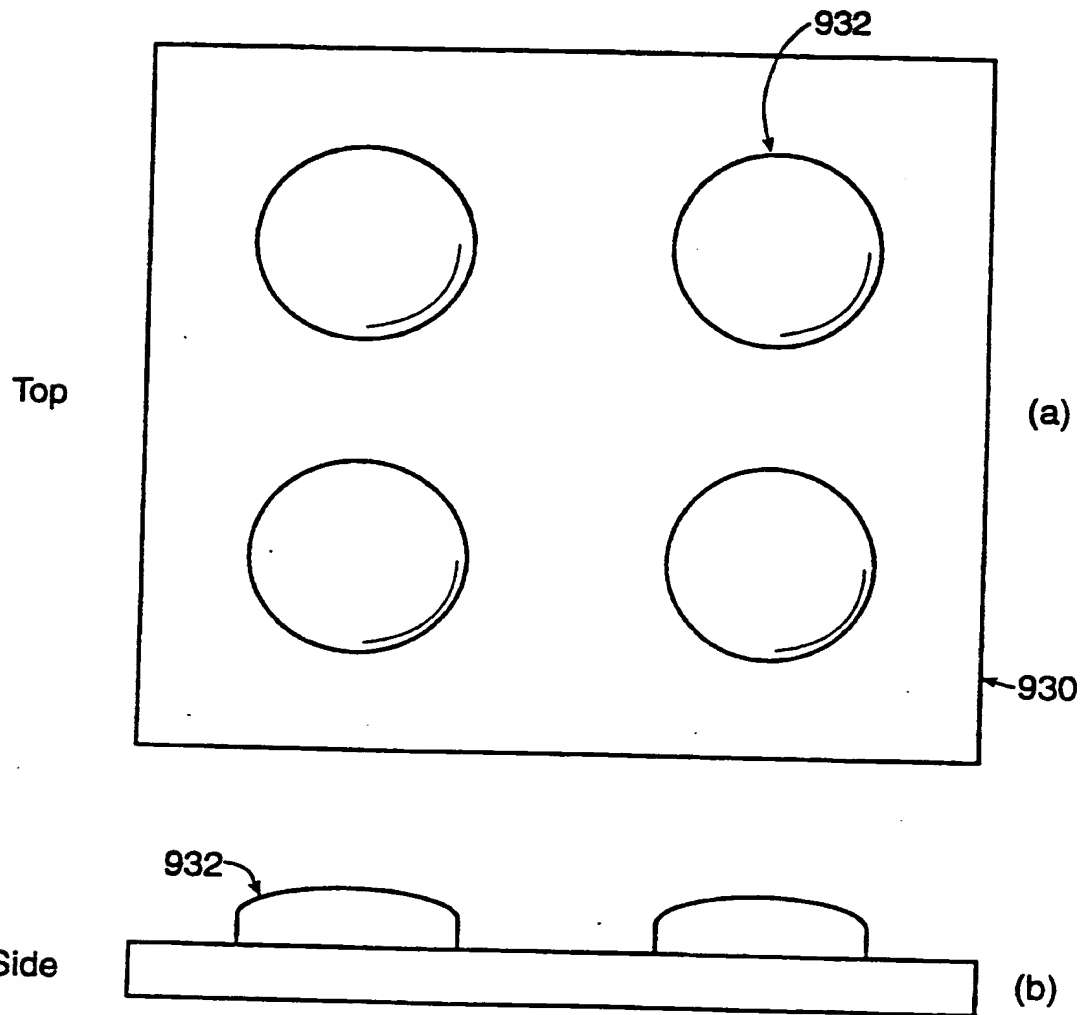


FIG. 8

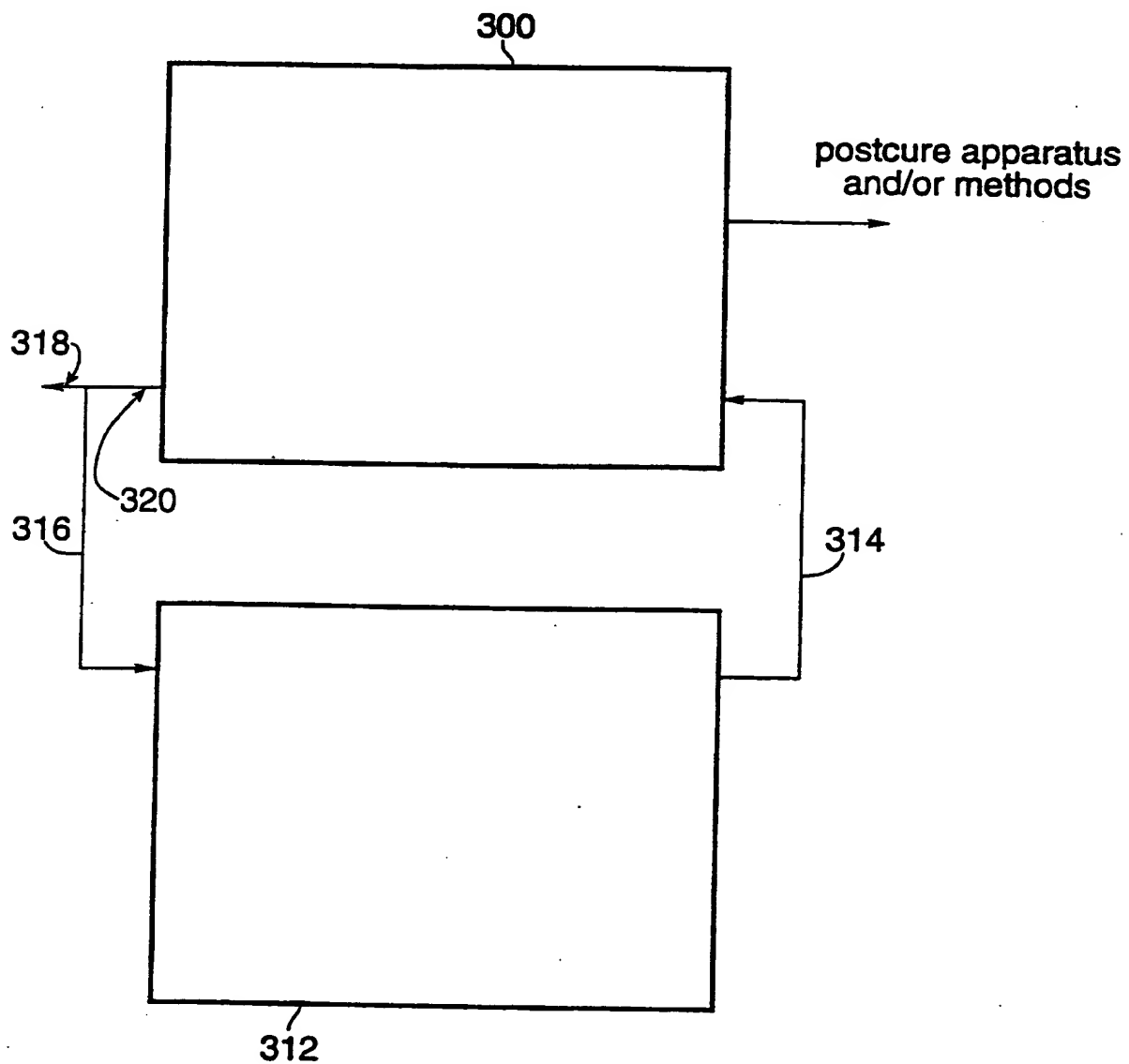


FIG. 9

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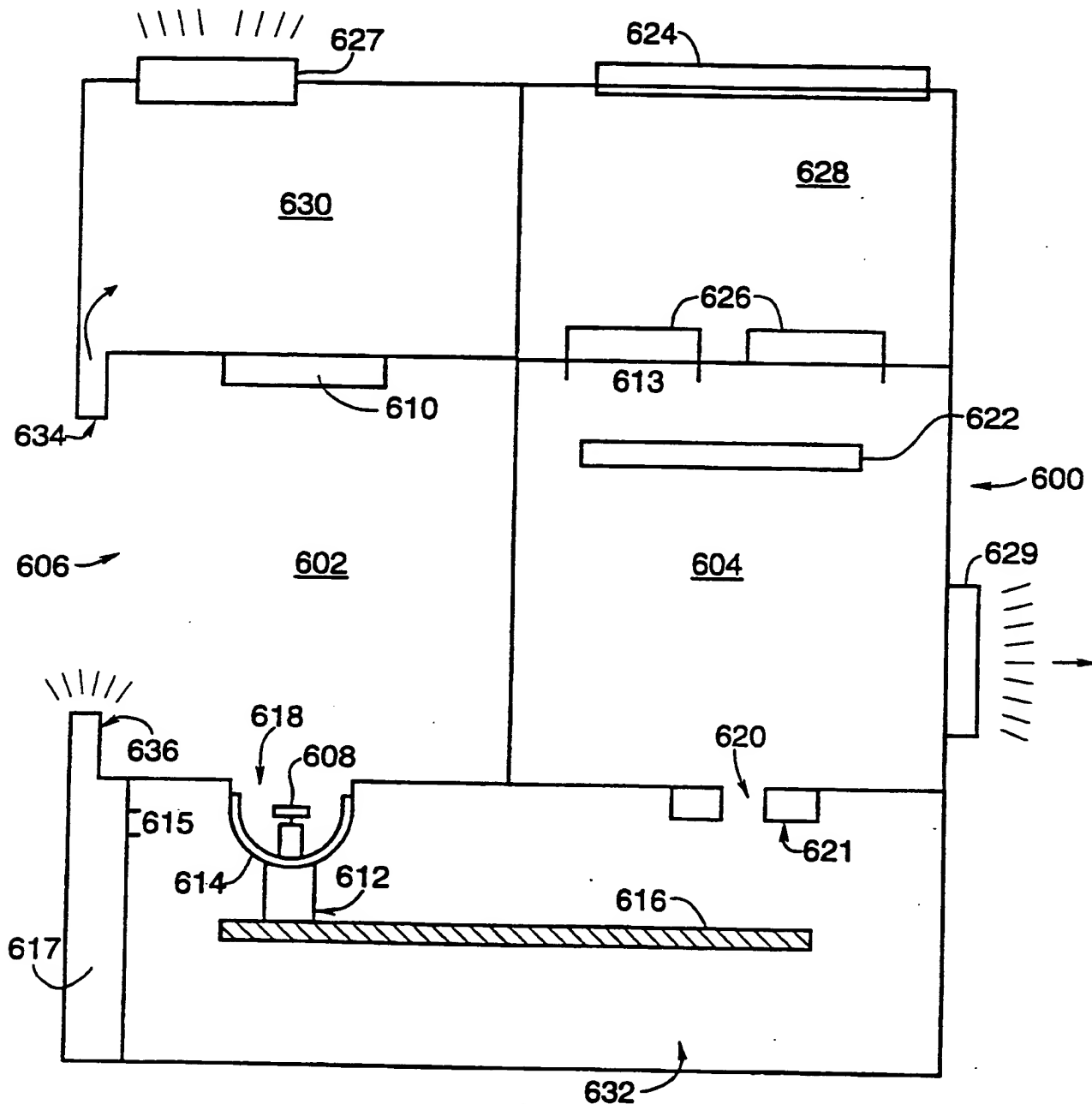


FIG. 10

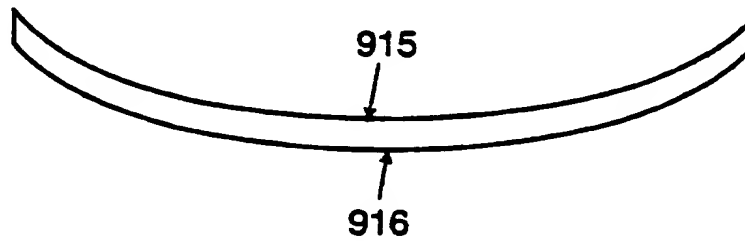


FIG. 11

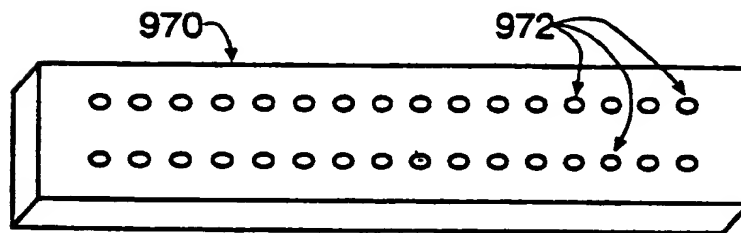


FIG. 12

604760" 1635660

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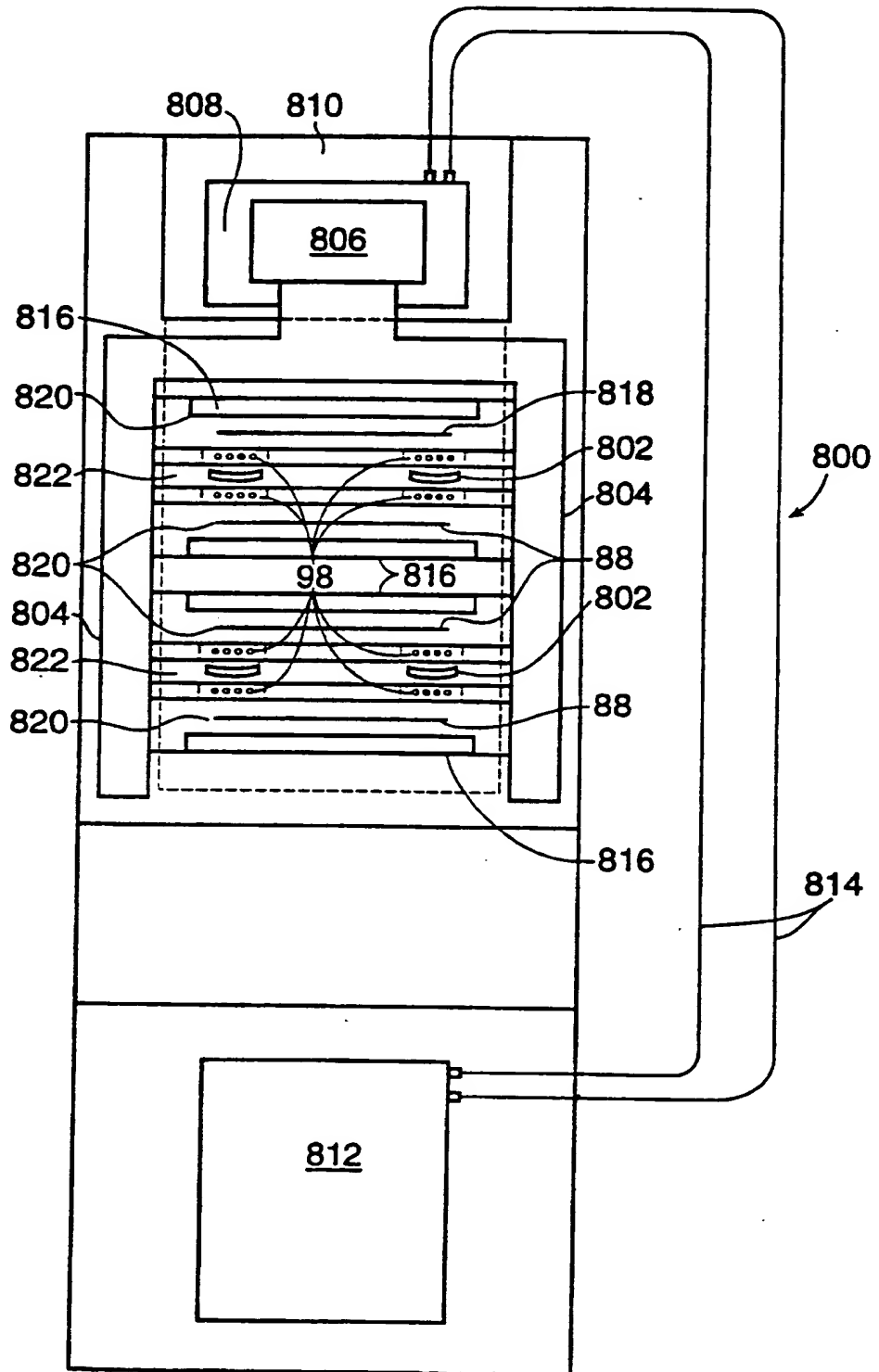


FIG. 14

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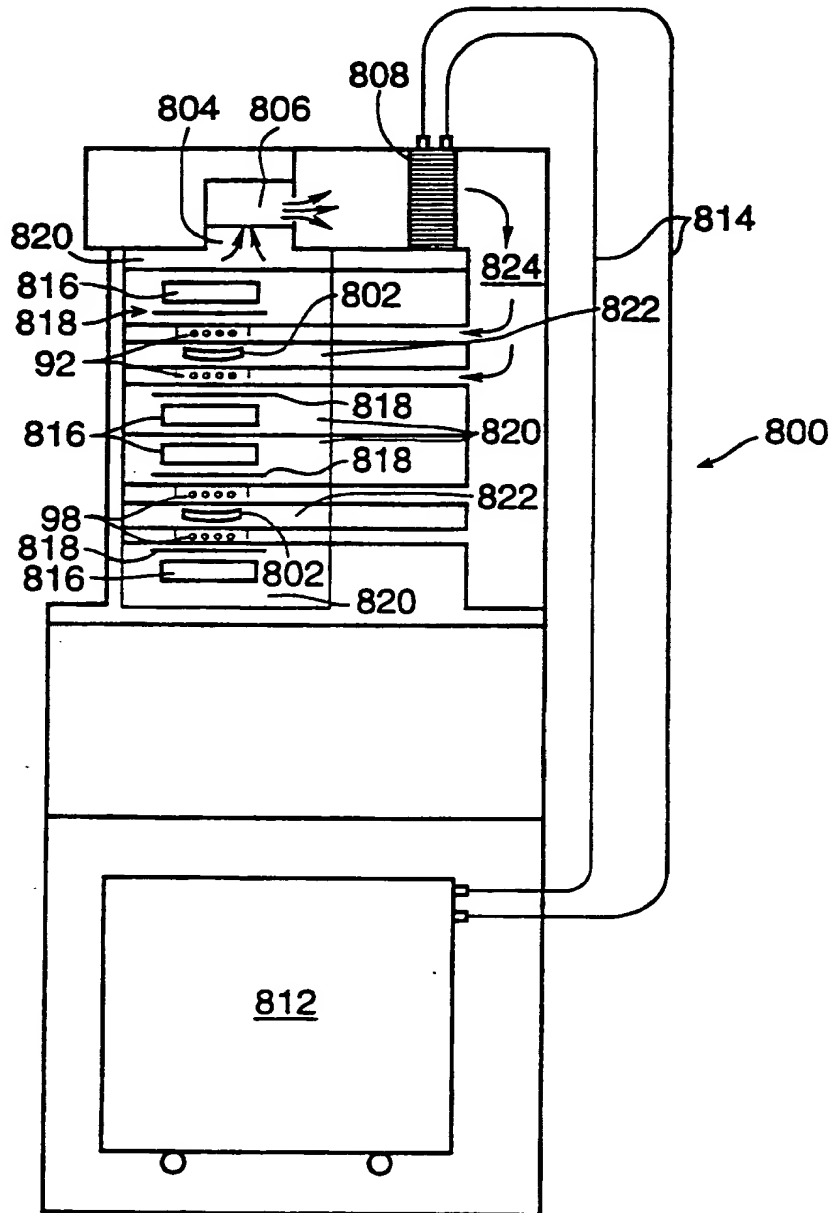


FIG. 15

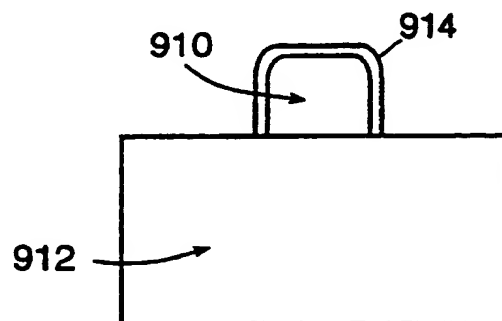


FIG. 16

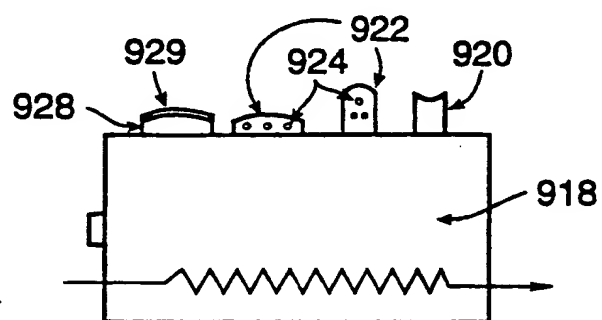


FIG. 17

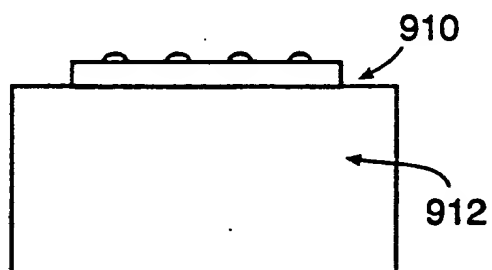


FIG. 18

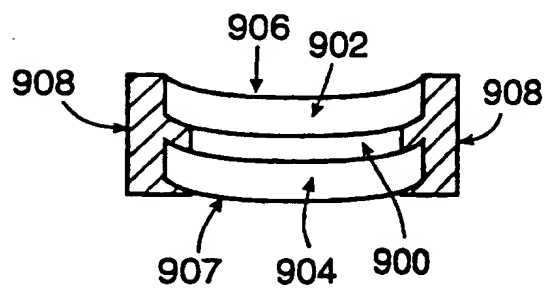
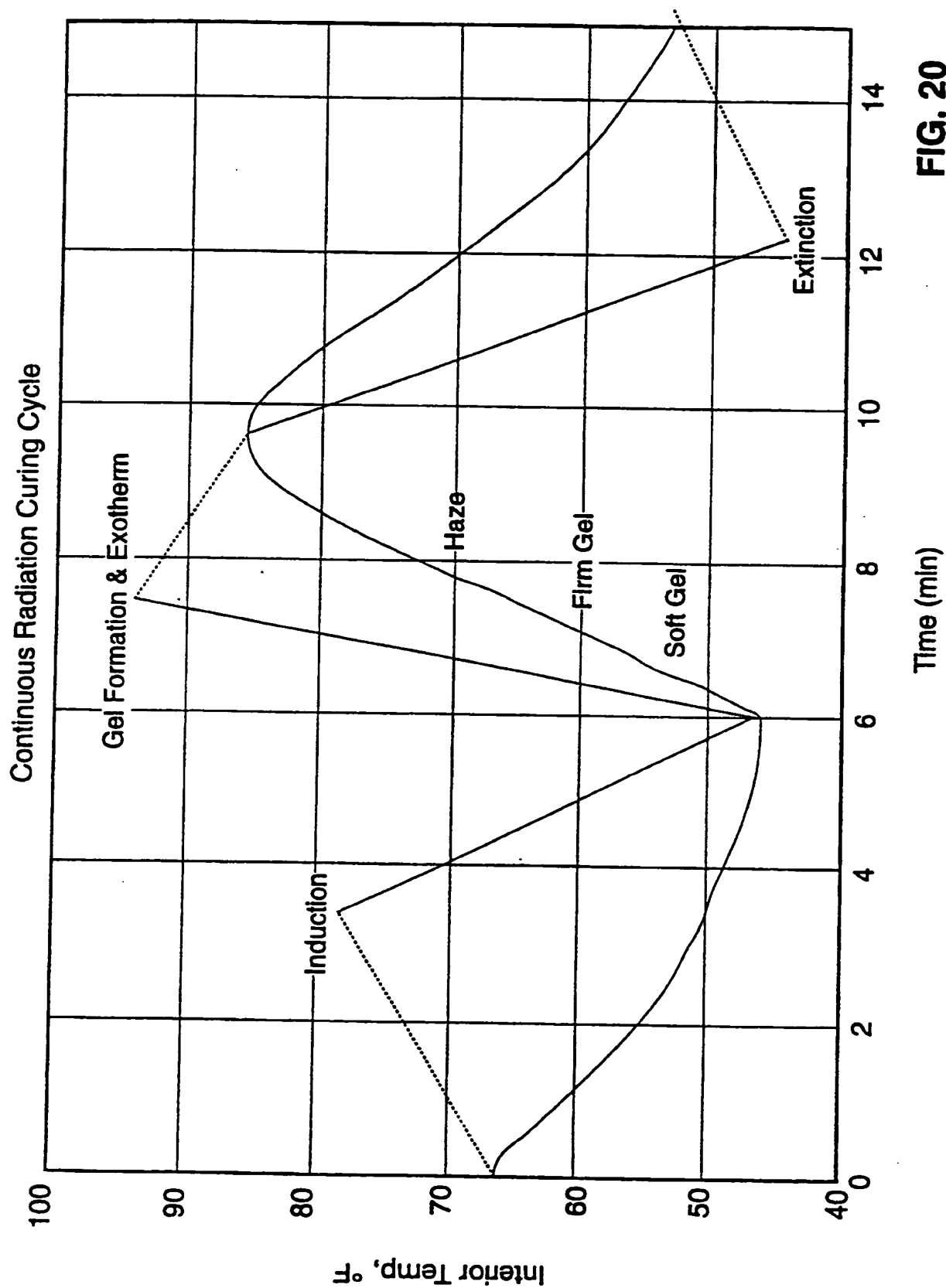


FIG. 19

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398</
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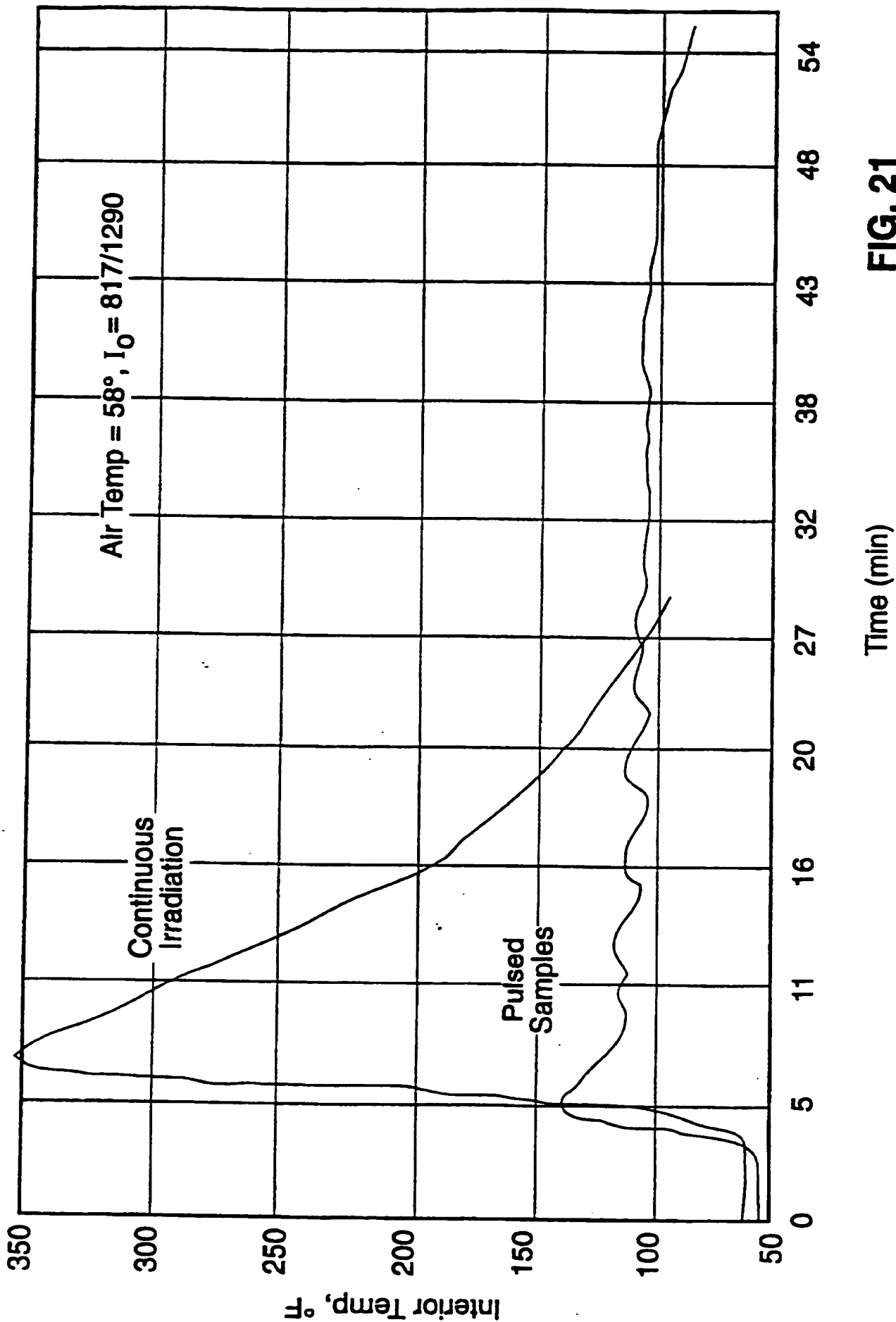


FIG. 21

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FIG. 22

Interaction of Pulsed Method Variables

The effect that this variable will tend to have:

MASS OF SAMPLE	LIGHT INTENSITY	RATE OF COOLING	IDENTITY OF MONOMER
As sample mass increases, initial exposure time may be increased. The mass of the sample interacts with light intensity to determine a preferred initial exposure time.	As light intensity increases, initial exposure time may tend to decrease. The light intensity level may be controlled for a fixed curing cycle and initial exposure time. It is believed, however, that changes in light intensities may have little impact above a certain light "saturation" point for the sample.	The rate of cooling tends to have a small impact upon the preferred initial exposure period in the FC-104 curing chamber.	Differences in inhibitor & Initiator levels between batches of otherwise identical monomers may significantly affect induction periods. Various radiation curable compounds may also vary widely in their preferred initial exposure times due to inherent differences in their reactivity.
Increased sample mass may require increased total cycle time to dissipate the additional heat generated.	Increased light intensity may cause a decrease in the initial exposure period. It is believed, however that changes in light intensities may have little impact above a certain light "saturation" point for the sample.	Increased rates of heat removal may allow for a reduction in the time between pulses and thus total cycle time.	A significant effect that various monomers may have upon total cycle time will come from their different preferred initial exposure times.
Increased sample mass may require longer periods of cooling between pulses of light. More heat tends to be generated from each pulse for larger samples, thus requiring longer time periods to remove heat.	For a given light intensity level, the duration of the pulses may be adjusted to create the desired amount of reaction. The timing between the pulses may also be so adjusted.	Increased rates of heat removal tend to allow for a reduction in the time between pulses.	The duration of the pulses may be adjusted to create the desired amount of reaction and heat generation for the for the particular lens forming material being cured. Adjusting the cooling period between pulses may also be beneficial.

On this cycle variable in:

OPTIMAL
INITIAL
EXPOSURE
TIME

TOTAL
CYCLE
TIME

TIMING
BETWEEN
PULSES

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Interaction of Pulsed Method Variables (continued)

The effect that this variable will tend to have:

On this cycle
variable in:

TOTAL
EXPOSURE
TIME

DURATION
OF
PULSES

MASS OF SAMPLE	LIGHT INTENSITY	RATE OF COOLING	IDENTITY OF MONOMER
Increased sample mass tends to require both increased initial exposure time and a greater number of pulse/cooling cycles.	Increased light intensity will tend to result in decreased total exposure time and decreased light intensity will tend to require increased exposure time. It is believed, however, that changes in light intensities may have little impact above a certain light "saturation" point for the sample.	There is only a small relationship between the total dosage of light a particular mass sample requires to polymerize and the rate at which it is being cooled.	A significant effect that monomer identity may have on total cycle time may be contributed by differences in the preferred initial exposure period. Various lens forming materials may also require longer/shorter duration pulses depending upon their reactivity.
The length of the pulses during each phase of the curing cycle may be adjusted for different mass samples. The time between pulses may be increased/decreased according to mass.	The duration of the pulses may be varied in inverse proportion with the light intensity selected. It is believed, however that changes in light intensities may have little impact above a certain light "saturation" point for the sample.	A pulse will tend to generate a certain amount of heat to be dissipated. Since the pulse duration tends to be small relative to the time between pulses when the heat is being removed, changes in the rate of heat removal should not significantly affect the ideal pulse duration.	Various lens forming materials require different pulse duration depending upon their reactivity. For a selected material, slight differences in Initiator & Inhibitor levels will not tend to affect pulse duration.

FIG. 22
(continued)

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64760"405660

FIG. 23

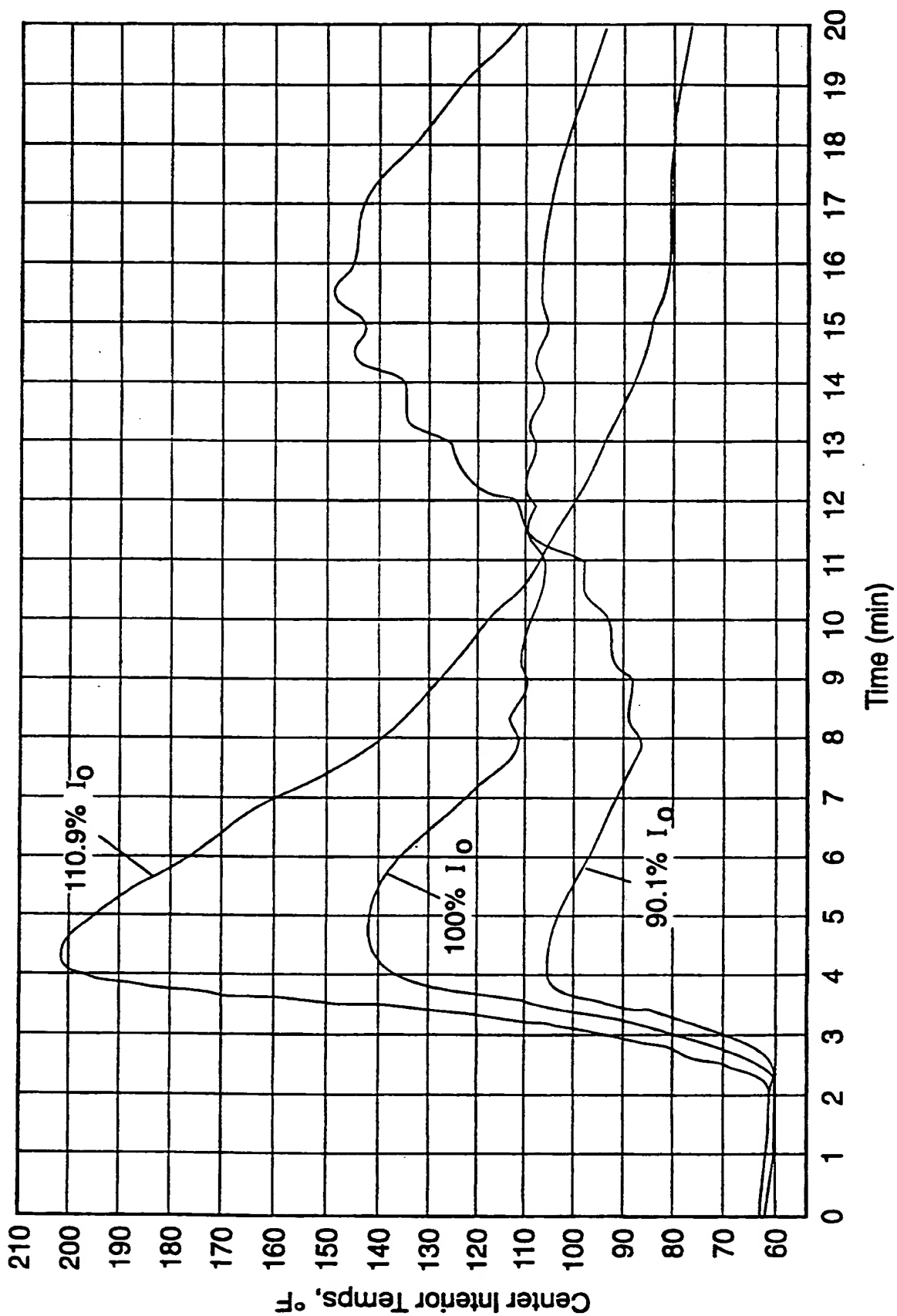
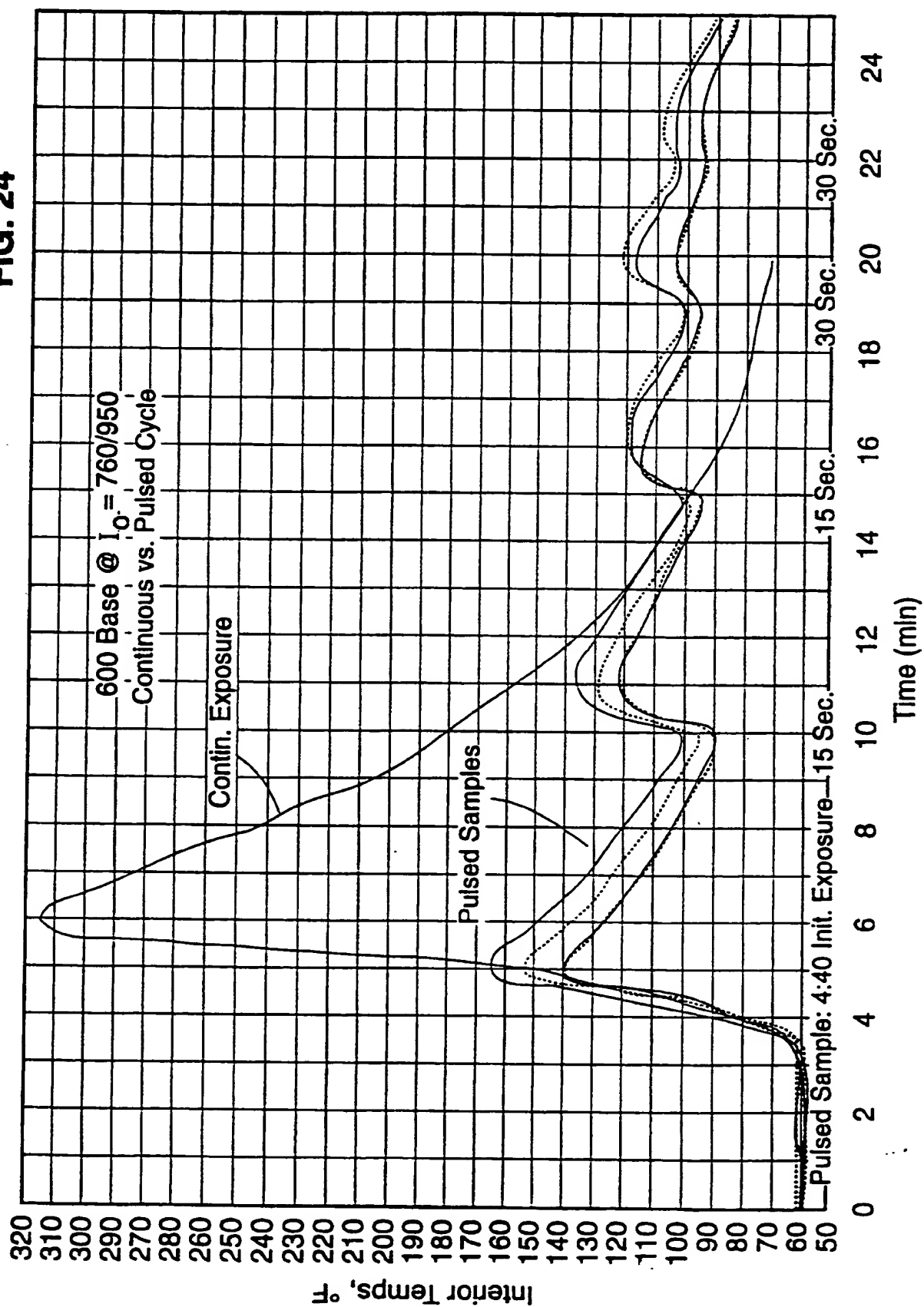
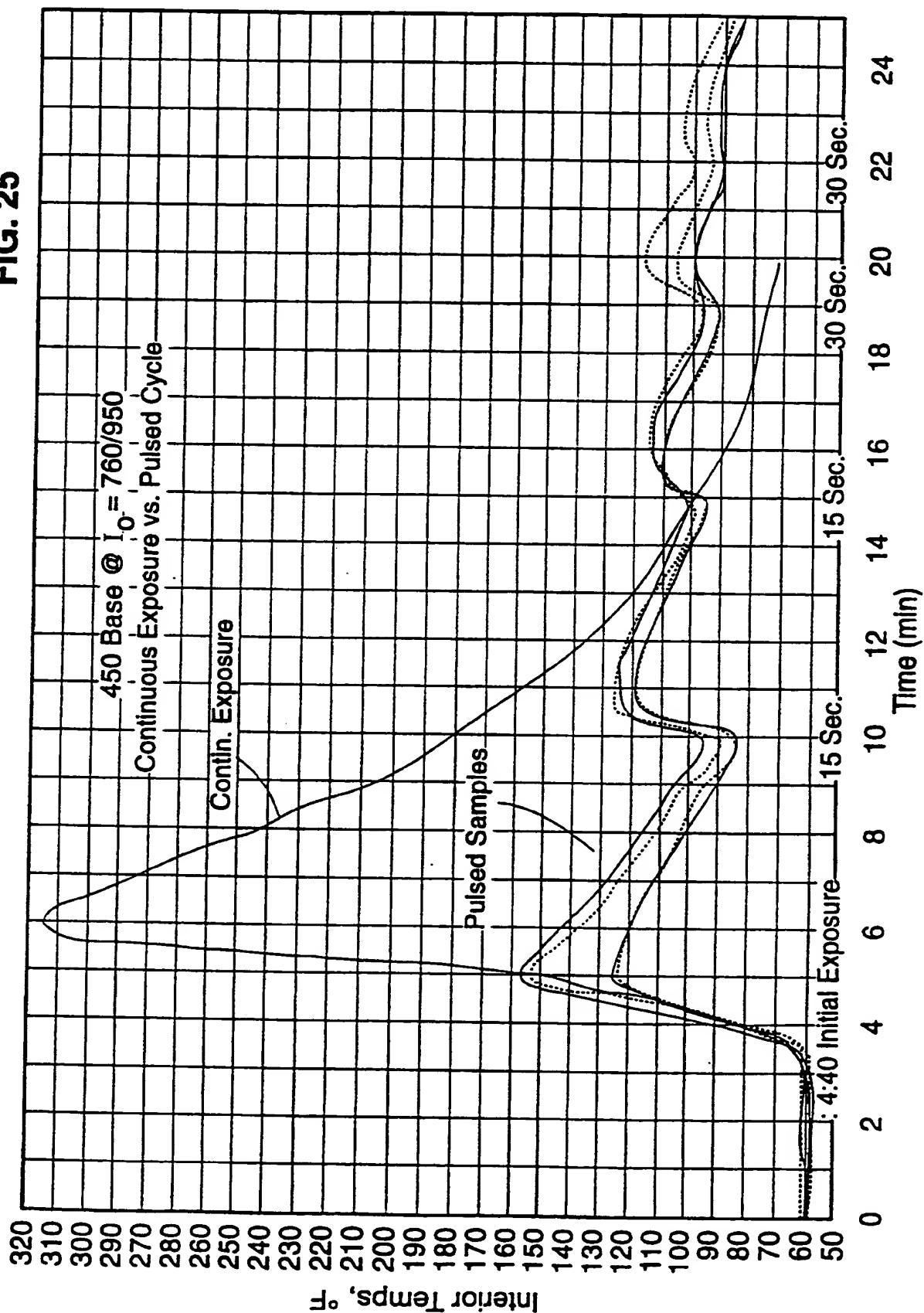


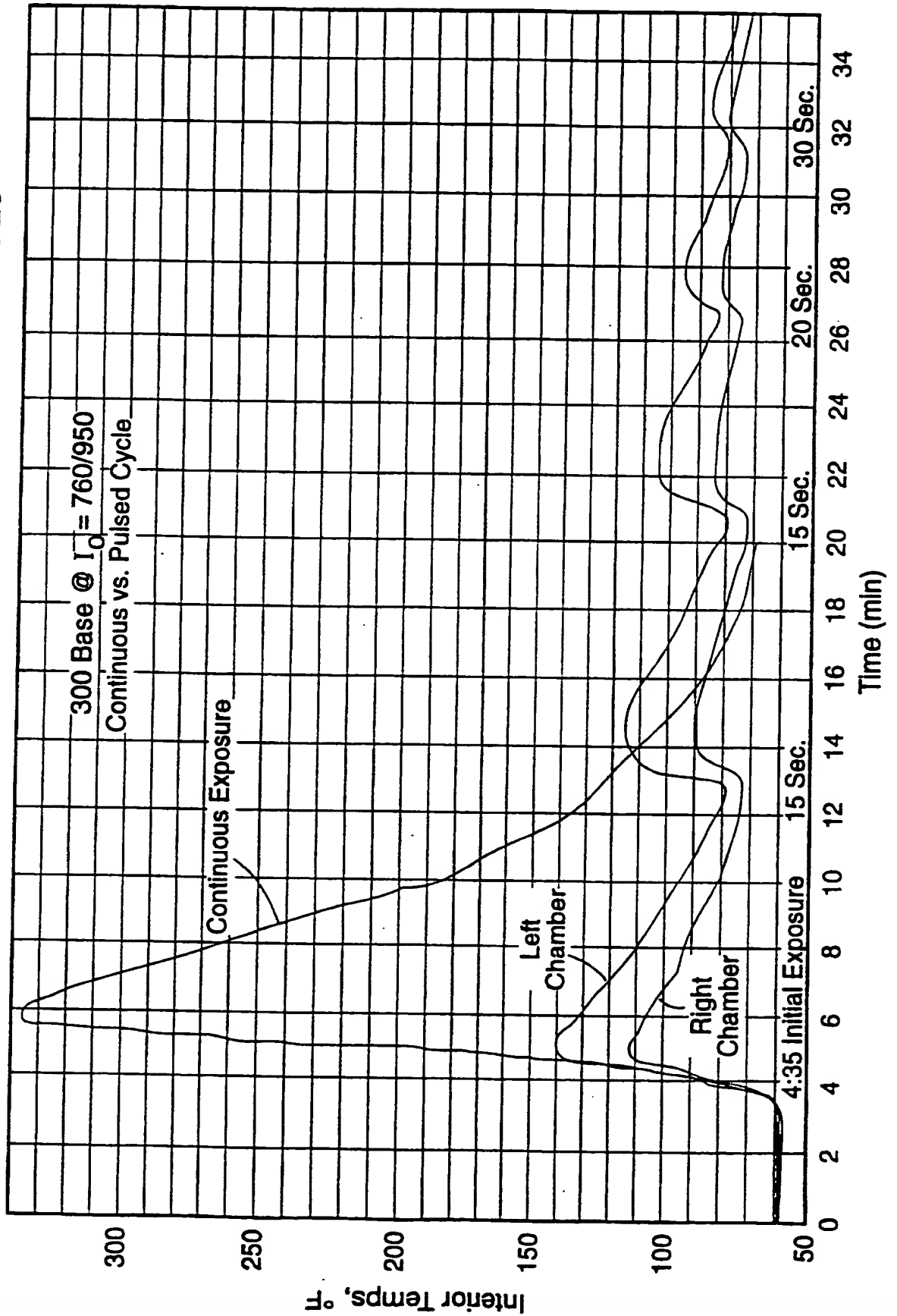
FIG. 24



[illegible]

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FIG. 26



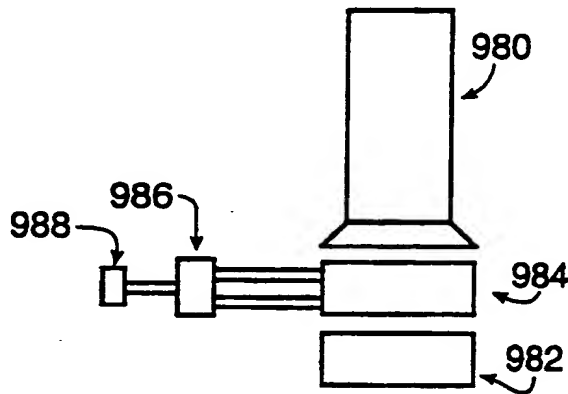


FIG. 27

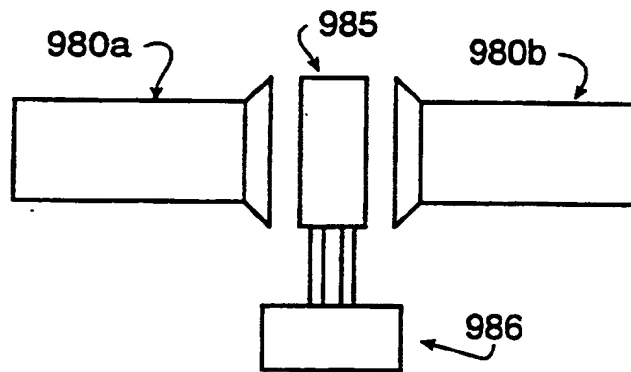


FIG. 28

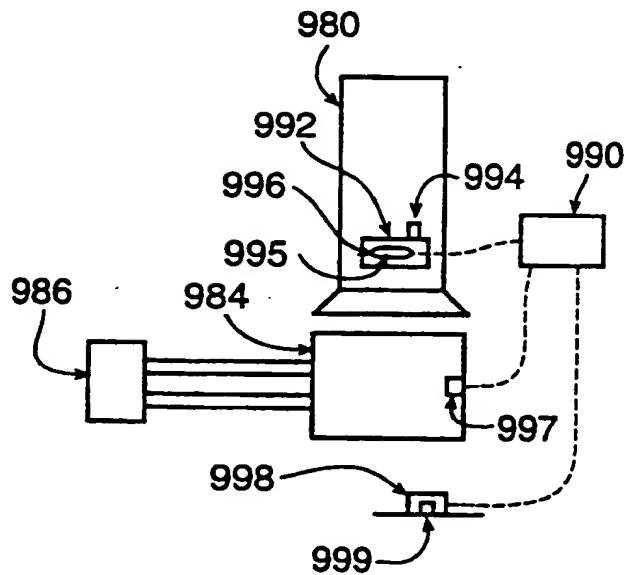


FIG. 29

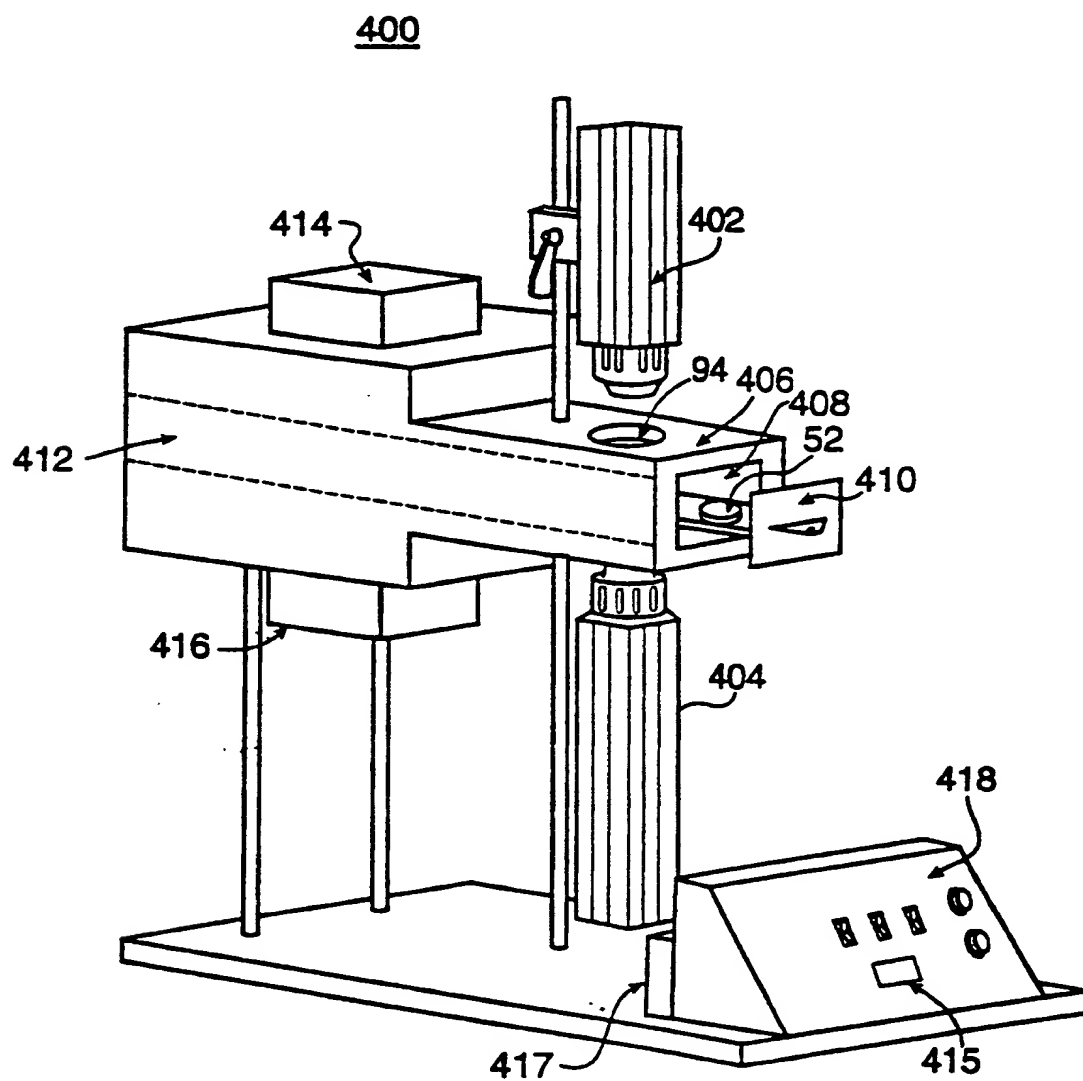


FIG. 30

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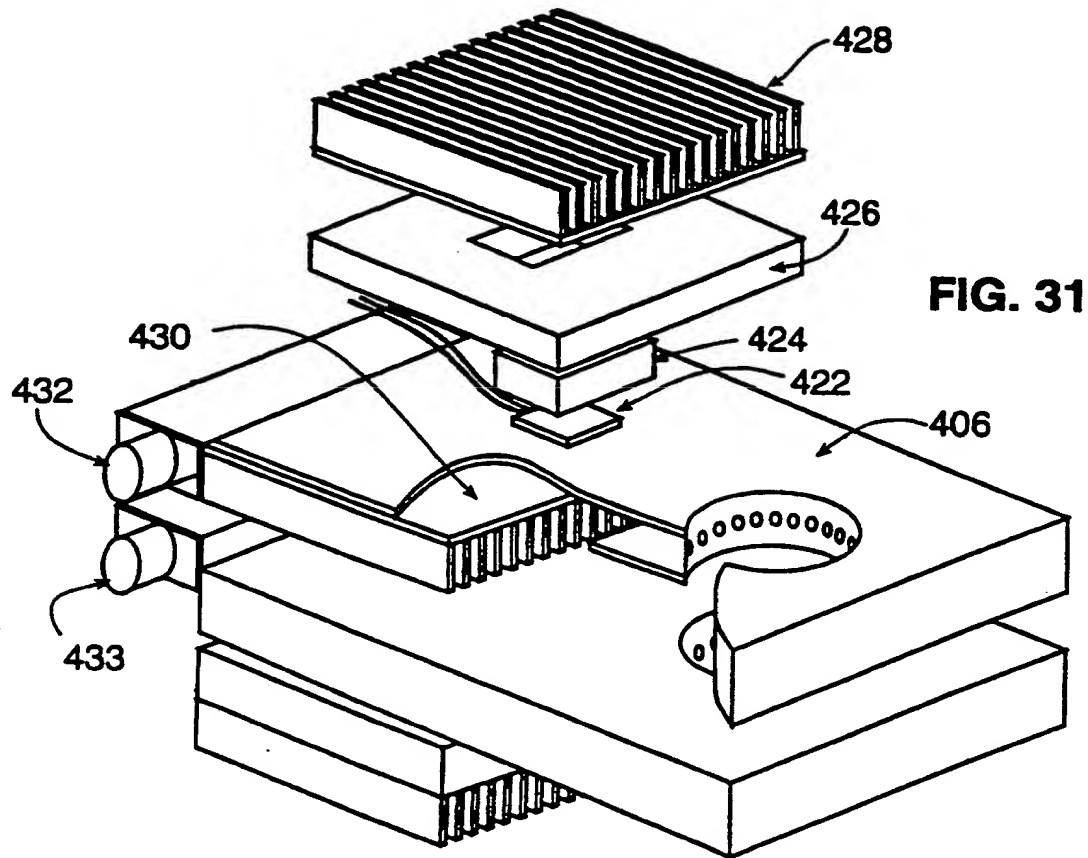


FIG. 31

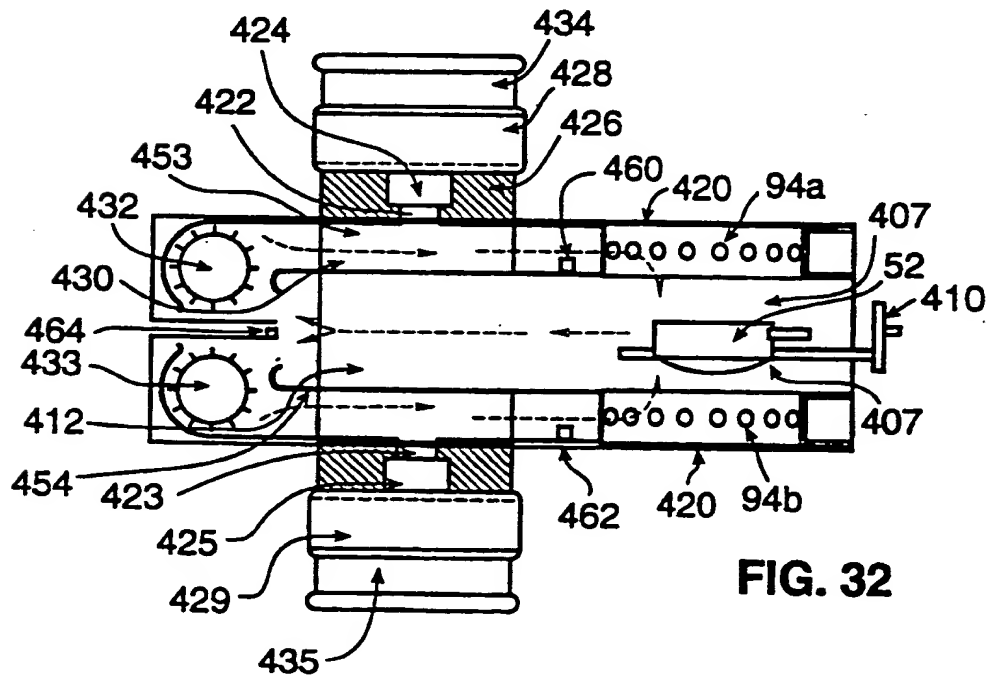


FIG. 32

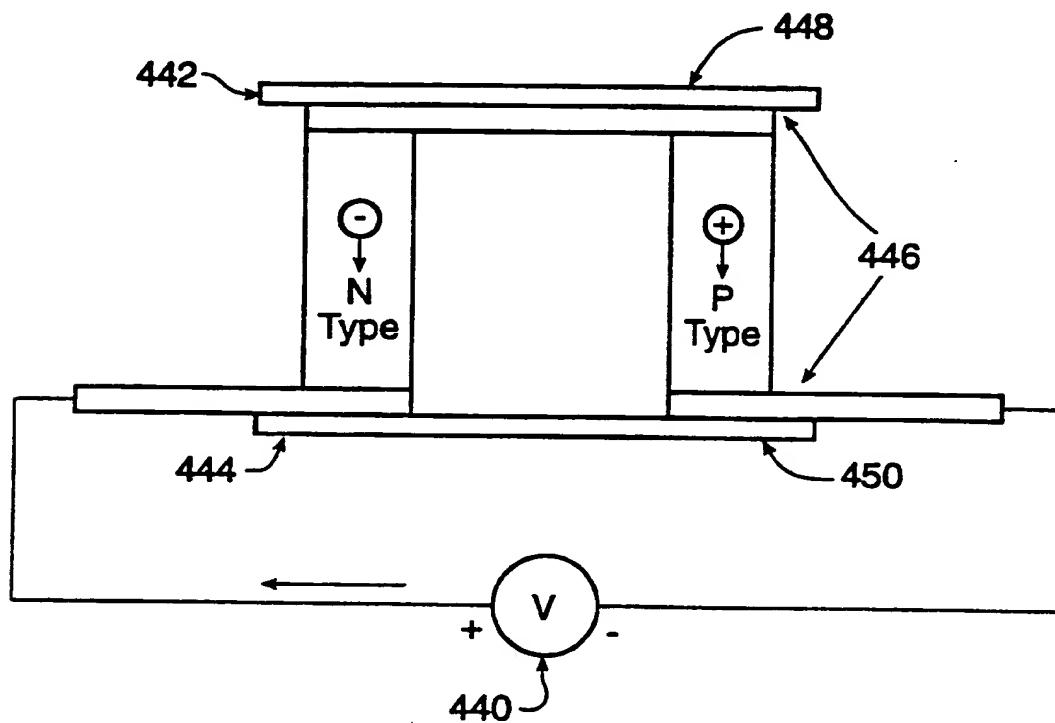


FIG. 33

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FLASH LAMP CURING CYCLE

ELAPSED TIME
(SECONDS)

FLASH #	TOP LAMP	BOTTOM LAMP
1	1	
2		3
3	5	
4		7
5	9	
6		11
7	13	
8		15
9	17	
10		19
11	21	
12		23
13	25	
14		27
15	29	
16		31
17	33	
18		35
19	37	
20		39
21	41	
22	45	
23	49	
24		267
25	269	
26	541	

ELAPSED TIME
(SECONDS)

FLASH #	TOP LAMP	BOTTOM LAMP
27		543
28	781	
29		783
30	785	
31		787
32	905	
33		905
34	909	
35	913	
36		959
37	961	
38		963
39	965	
40	969	
41	973	
42	977	
43	1021	
44		1023
45	1025	
46		1027
47	1029	
48		1031
49	1033	
50		1035
51	1037	
52		1039

FIG. 34

001160 1050260

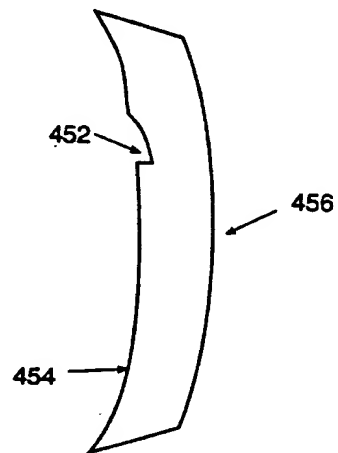


FIG. 35

60414201-10000000

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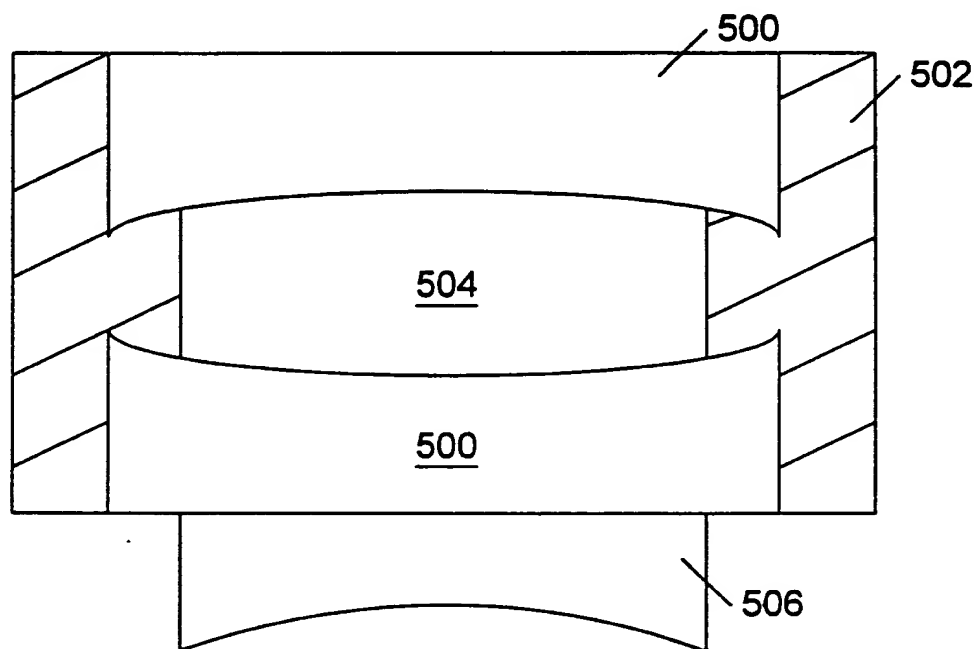


FIG. 36

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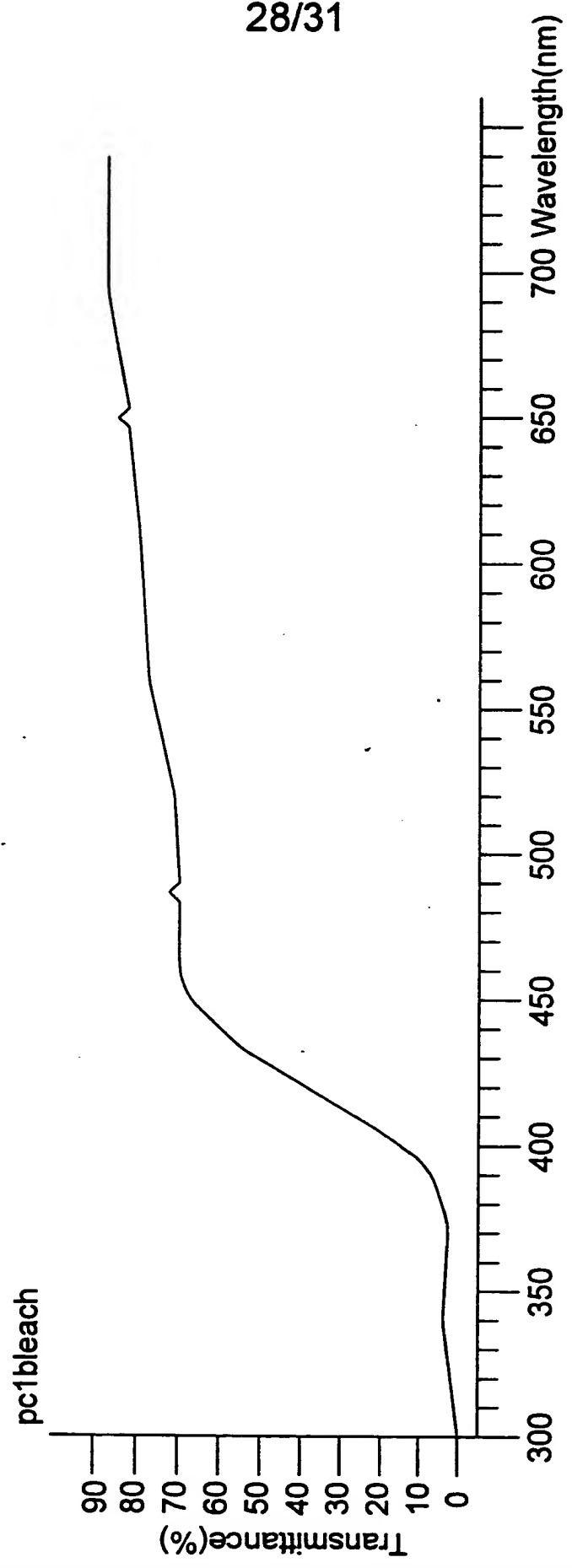


FIG. 37

644T.60" 4636E.60

64760"163960

BY	CLASS	SUBCLASS
DRAFTSMAN		

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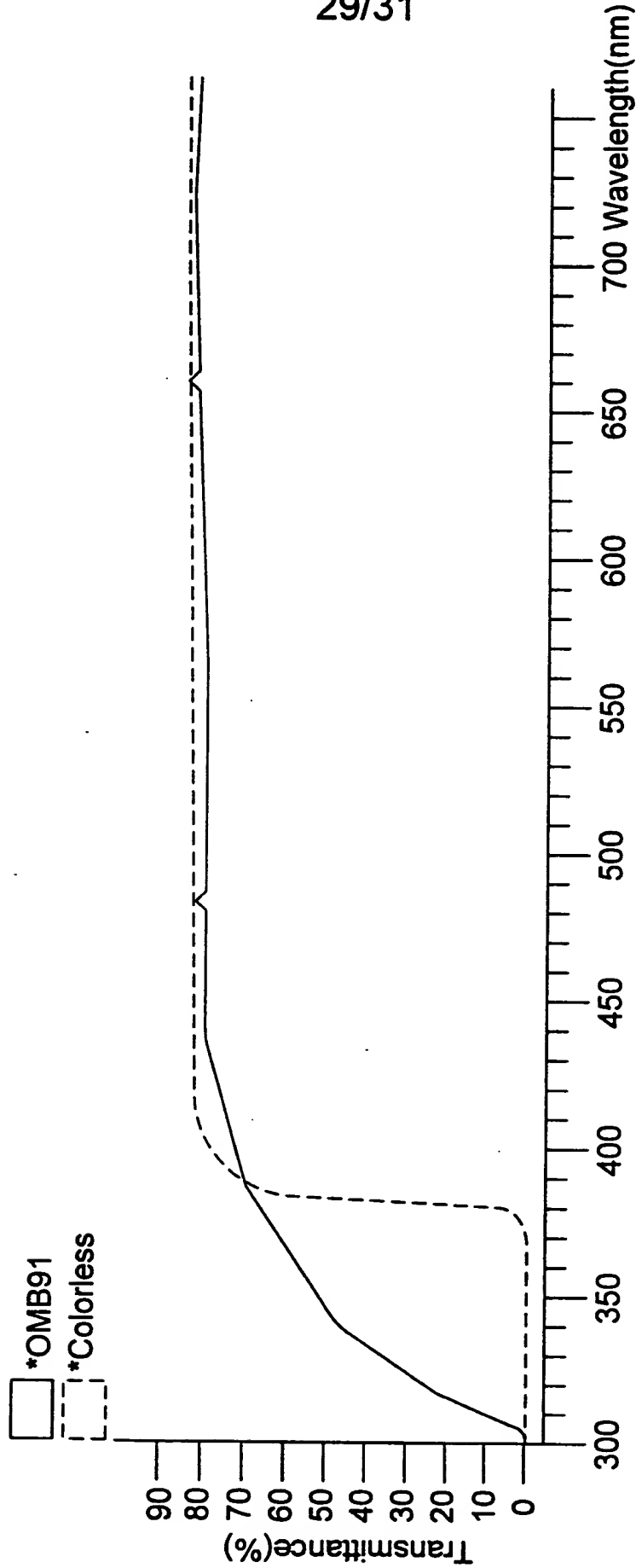


FIG. 38

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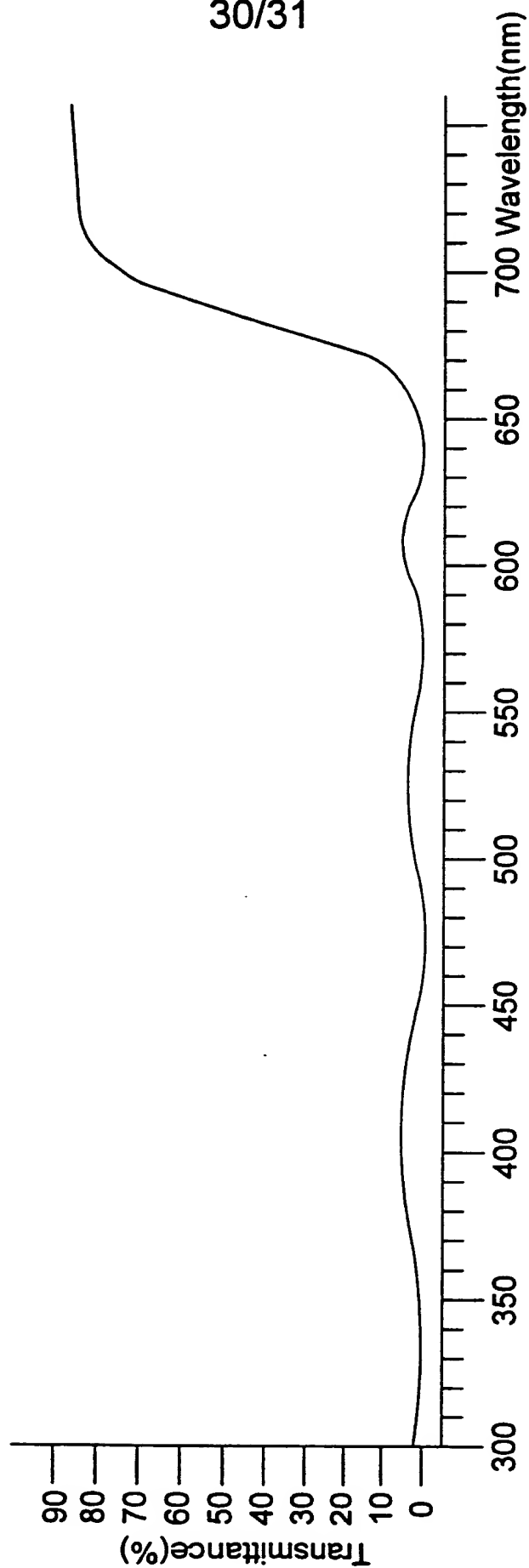


FIG. 39

604160-163660

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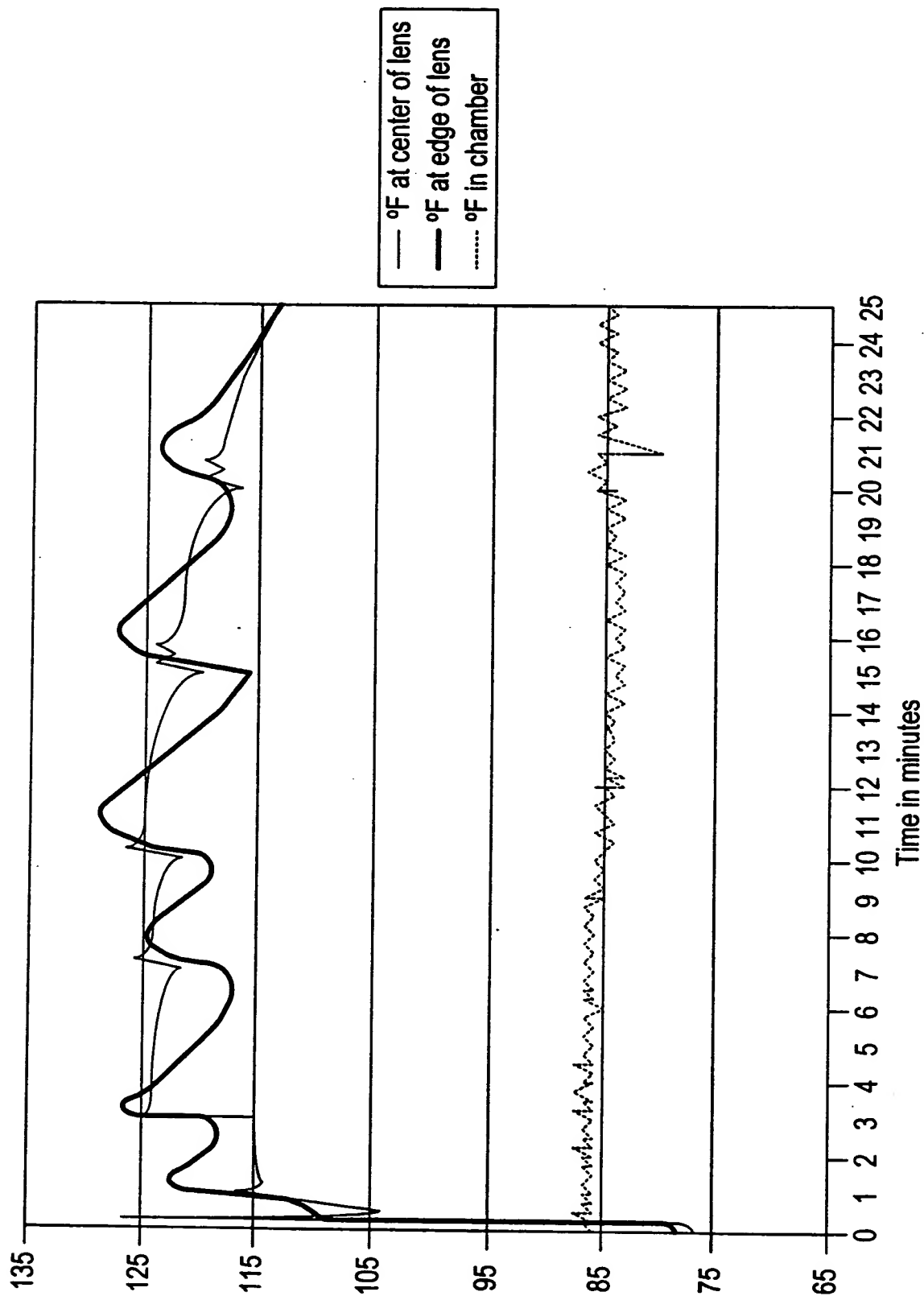


FIG. 40